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G89-905 Weed Control on CRP Acres (Revised July 1997)

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Weed Control on CRP Acres

Establishing perennial grasses on former cropland presents a challenge. Weed control can be accomplished with herbicides, tillage, burning, mowing, and crop competition. The key to weed control is timeliness.

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The Conservation Reserve Program (CRP), enacted Dec. 23, 1985 as part of the Food Security Act of 1985, encouraged farmers to stop growing crops on highly erodible cropland and plant perennial grasses or trees through a 10-year contract with the U.S. Department of Agriculture. The contracts that expired in 1996 were extended to 1997 if desired by the producer. The program has been funded again with the 15th sign-up period held the first part of 1997. Contracts that expire in 1997 could be rebid and, possibly, new land entered into the program. These bids were ranked according to the National Environmental Benefits Index which has seven ranking factors. These include: wildlife habitat, water quality, erosion reduction, long-term retention (mainly trees), air quality, conservation priority area, and cost. USDA will share in the cost of establishing permanent vegetation.

Weeds should be controlled on CRP acres to reduce the risk of seeding failure and eliminate possible reseeding costs. Soil moisture must be available for seed germination, seedling emergence, and establishment to be successful in getting stands of grasses and/or legumes. Weeds can quickly and thoroughly consume soil water throughout the upper soil profile and must be controlled to allow grass and legume seedlings to germinate and emerge. In addition, rapid-growing, uncontrolled weeds can form a canopy which shades slower growing desirable plants and prevents the formation of desirable protective ground cover.

Weed-Mite-Virus Interactions

Much of the land bid into the CRP Program is in the small-grain-producing areas of Nebraska. Small grains--including wheat, oats, and possibly rye and barley--act as hosts for wheat curl mites and the wheat streak mosaic virus and are affected by this disease. Other plant hosts are perennial grasses, plus green foxtail, longspine sandbur, stinkgrass, witchgrass, and barnyardgrass.

Wheat streak mosaic problems are worse following a hail storm when winter wheat is in the soft to medium dough stage. This results in early volunteer plants and enables the wheat curl mite to move from the maturing wheat plants to the green volunteer plants. The incidence of mites and virus increases tremendously through the summer, providing the opportunity to infest the fall-sown wheat. This is often called "bridging the gap." Cropland converted to the CRP may contain volunteer cereals and summer annual grass weeds which could host the mites and wheat streak mosaic virus. The worst infection on winter wheat occurs when the crop is infested in the fall. Since the mites that transmit the disease cannot survive without feeding on living grasses, control measures should be taken to eliminate volunteer wheat and host grass weeds.

There are several possible scenarios on how some of the annual grass weeds could be a contributing factor to wheat streak mosaic problems. First, consider a wheat field where lots of grass established before the crop matures. The mites could move from the winter wheat to the grass weeds and then to the volunteer wheat. With good stands of winter wheat, grass weeds usually have difficulty establishing because of crop competition. Summer annual grasses are usually the greatest problem in winter wheat not planted at the optimum time and in spring-planted small grains.

Second, consider land not being cropped and scheduled to be planted to grass for CRP. With no crop to offer competition to weed seedlings, grass weeds easily establish unless they receive competition from large broadleaf weeds. These grasses could host the wheat curl mite. If a killing frost occurs before the fall-seeded winter wheat emerges, there will probably be little carryover of mites and virus from the grass weeds to the fall-sown wheat. However, if frost occurs late, the mites may have time to move to the emerging winter wheat plants.

Third, the mites may live on the summer annual grass weeds on CRP acres (planted or scheduled to be planted), and then move to volunteer wheat in adjacent fields. From there they may move to the seeded winter wheat field. This could be a bigger problem since the volunteer winter wheat will not be killed by frost.

These examples point out why weed control on CRP acres deserves serious consideration as a means of reducing problems to adjacent cropland.

Tillage

Weeds must be controlled in CRP acres by tillage, herbicides, crop competition, fire, and mowing or a combination of these methods. Tillage can be used effectively in killing weeds and preparing a seedbed for perennial grasses and/or legumes. Tillage should be used whenever possible, but it may destroy residue needed to protect the soil from erosion. One needs to measure how much residue is present and select tillage practices that will leave sufficient residue to protect the perennial seedlings from erosion. The goal is to provide a firm seedbed and sufficient loose soil to adequately cover the seed. An excellent reference is *Establishing Dryland Forage Grasses* (revised *NebGuide G81-543*). There are situations when the weed competition is so great that it may be necessary to plow to bury the weed seed. A crop of rye, winter wheat, corn, sorghum, oat, or millet will need to be planted for crop residue to establish the

grass and/or legumes.

Several existing herbicides are registered for use on CRP land. Those recommended for use in Nebraska will be discussed. Regardless of the herbicide used, leave an area unsprayed to determine weed control effectiveness and as a check in case of injury to the seeded grasses.

Preplant and Preemergence Herbicide Treatments

Cyclone, Landmaster BW, Roundup Ultra, and 2,4-D are herbicides that are essentially non-residual. They cannot be expected to control weeds that have not emerged, but can replace tillage operations prior to seeding so that less residue is destroyed and more soil moisture is saved. The decision to use tillage or herbicides should be based on soil factors, probability of success, and costs.

2,4-D Low Vol ester is an economical choice to control broadleaf weeds. Application should be at least one month before seeding grasses or legumes. Use 1 pt/acre for most small broadleaf weeds. Increase the rate to 2 pt/acre if large weeds are present at the time of application. Remember that 2,4-D can persist in the soil for about four weeks after application and may injure grass seedlings and legumes if applied within 30 days of planting. Rates are based on 4 lb/gal acre 2,4-D.

Landmaster BW (glyphosate plus 2,4-D) at 40 to 54 oz/acre plus 17 pounds of spray grade ammonium sulfate/100 gal of spray solution can be used for grass and broadleaf weed control. Because of the 2,4-D, Landmaster BW must be applied at least 30 days before seeding grasses or legumes. Apply Landmaster BW in 10 gal/acre of carrier or less.

Roundup Ultra and **Roundup Ultra RT** may be applied before seeding or before grasses and legumes emerge to control most grass and broadleaf weeds. Add spray-grade ammonium sulfate at 17 lb/100 gal of spray solution to further improve the effectiveness of the Roundup Ultra activity. Always apply Roundup Ultra in 10 gal/acre of carrier or less.

Cyclone also can be applied as a "burndown" treatment to control emerged weeds before seeding or before emergence. Use 2.0 pt/acre and add a surfactant at 0.25% v/v of spray solution. This treatment is only effective on seedling grass and broadleaf weeds.

The preplant and preemergence treatments listed previously will not injure grasses or legumes when applied at the recommended interval before grass seeding. However, because of minimal soil persistence, they will not control weeds that emerge after grass seeding. A postemergence treatment may be required to control weeds in the established grass and/or legume stand. No postemergence herbicides are available for control of summer or winter annual grasses in new seedings of perennial grasses.

Atrazine is only labeled for preemergence application of switchgrass and/or big bluestem stands. It will kill legumes and other grasses in grass/legume mixtures. Apply 1 to 2 qt/acre after planting but before the grass emerges. Use the lower rate on high pH, low organic matter soils. Atrazine can be tank-mixed with Cyclone or Roundup Ultra to kill weeds that are present at application. Cyclone is much more effective in controlling weeds when tank-mixed with atrazine than when used alone.

Prowl and **Treflan** are used for land planted to legumes only. They must be incorporated into the soil and will control many annual grasses and broadleaf weeds if applied before germination.

Postemergence Herbicide Treatments

The secret of successful weed control in fields that have been planted to perennial grasses is timeliness. Most winter and summer annual broadleaf weeds can be controlled if the herbicides are applied when the weeds are less than 6 inches tall. If weeds are killed early, competition is reduced and the seeded grasses can make more rapid growth.

Ally can be applied at 0.1 oz/acre to the following grasses after the 3- to 4-leaf stage: blackwell switchgrass; blue grama; big, little, plains, sand, ww spar bluestem; buffalograss; green sprangletop; Indiangrass; kleingrass; altherstone, sand, weeping, and Wilman lovegrass; sideoats grama; orchardgrass; Russian wildrye; and bluebunch, crested, intermediate, pubescent, Siberian, slender, streambank, tall, thickspike, and western wheatgrass. Do not use on soils with a pH greater than 8.0 or on legumes. Add a surfactant at 0.25% v/v. To improve the spectrum of weeds controlled add 2,4-D LVE at 0.25 pt/acre. Grasses must be in 5-leaf stage.

Some broadleaf weeds have become tolerant to Ally and other ALS herbicides. If Ally, Amber, Finesse, or Glean have been used in the past, ALS-resistant kochia or other broadleaf weeds may be present.

Amber at 0.28 to 0.56 oz/acre controls many broadleaf weeds. Use 60 days after emergence of desirable grasses. The grasses should be in 3 to 4-leaf stage. If 2,4-D is added, wait until after grasses are in 5-leaf stage. The following grasses are listed on the label: bermudagrass, big bluestem, little bluestem, smooth brome, buffalograss, sheep fescue, blue grama, sideoats grama, redtop, timothy, and bluebunch, intermediate and pubescent wheatgrass. Do not use on grass/legume mixture. Add surfactant at 0.25% v/v. The possibility of ALS-resistant weeds exists.

Banvel plus 2,4-D amine is a good combination if 2,4-D tolerant weeds are present, such as wild buckwheat, triazine-resistant kochia, or ALS-resistant weeds. Apply 0.5 pt/acre of Banvel plus 1 pt/acre of 2,4-D amine for cool-season grasses after the 5-leaf stage. Warm-season grasses are more prone to injury, so the use rate should be reduced to 0.25 pt/acre of Banvel plus 0.5 pt/acre of 2,4-D amine. Grass stands that are more than one year old may be treated with 0.5 to 1 pt/acre of Banvel plus 0.5 to 2 pt/acre of 2,4-D amine for perennial weed control. Banvel and 2,4-D will kill legumes in grass/legume seedings. Rates of 2,4-D are based on 4 lb ae/gal.

Buctril 2EC controls many broadleaf weeds and will not injure most grasses after the 3-leaf stage. Buctril 2EC should be applied at 1.5 to 2.0 pt/acre in a minimum of 10 gal/acre of carrier by ground or 5 gal/ acre by air. This treatment may be applied to grass/alfalfa mixtures after the third trifoliate leaf stage of alfalfa, though temporary leaf burning may be noticeable after application. Buctril 2EC can be tank mixed with 2,4-D to improve broadleaf weed control, but grasses must be in the 5-leaf stage. However, this tank mix will kill or injure legumes in grass/legume mixtures.

Curtail is effective on many summer and winter annual weeds at 2 to 4 pt/acre. Curtail is applied after perennial grasses have been established for one season and have tillered and developed a good secondary root system. The plants should be actively growing. During the second year, when perennial grasses have become more established, Curtail at 2 to 4 qt/acre can be used to aid in the control of Canada thistle. Musk thistle also can be controlled at 3 to 5 pt/acre.

2,4-D amine or **ester** will control most broadleaf weeds and will cause very little injury to most grasses when applied after the 5-leaf stage. Use 1 pt/acre of amine and 1/2 pt/acre of Low Vol ester on cool-season grasses. Reduce the rate by one half to three fourths on warm-season grasses,

which are less tolerant of 2,4-D. Legumes in grass/legume mixtures will be killed or injured with this treatment. Rates are based on 4 lb/gal acre of 2,4-D.

Escort is labeled for postemergence applications to crested wheatgrass and smooth brome at 0.25 to 1.0 oz/acre; and fescue and bluegrass at 0.25 to 0.5 oz/acre. Escort should be applied after the 3 to 4-leaf stage of the grasses. Add surfactant at 0.25% v/v.

Pursuit can be applied to legumes in 3-trifoliate growth stage and perennial grasses in 4-leaf stage. Use 4 oz/acre on alfalfa, clover, crown vetch, birdsfoot trefoil, lespedeza, smooth brome, reed canarygrass, orchardgrass, big bluestem, little bluestem, switchgrass, Russian wildrye, and intermediate, crested, and tall wheatgrass. Use a non-ionic surfactant at 0.25% v/v with Pursuit.

Strategies for Coping with Annual Grass Weeds

The establishment of grasses and/or legumes in fields infested with high densities of annual grass weeds presents a difficult challenge, even with herbicides. When grass weeds and seeded grasses germinate at the same time, the competitive advantage favors the weed species since their growth rate is faster.

Two categories of annual grass weeds require a different approach for suppression: (1) cool-season winter annuals such as downy brome, Japanese brome, hairy chess, and jointed goatgrass are the most troublesome. These have a life cycle similar to winter wheat and rye; and (2) warm-season annuals such as longspine sandbur, yellow foxtail, green foxtail, bristly foxtail, barnyardgrass, witchgrass, and stinkgrass.

The growth cycle of warm-season annual grasses fits within the growth time frame of corn, sorghum, and millet. The growth cycles of these two categories of annual grass weeds make it difficult to establish new seedings if the seeded species have a similar growth cycle to the weed species.

For example, seeding warm-season perennial grasses into a field infested with warm-season annual grass weeds, or seeding cool-season perennial grasses into a field infested with cool-season annual weeds without suppression of the weed species invites failure.

When feasible, the life cycle of the seeded species should be opposite from the life cycle of the major weed species. This may not always be possible, since high densities of warm-season annual weeds are most common on sandy sites and these sites are best adapted to perennial warm-season grasses, not cool-season grasses.

The best approach is to suppress the weed densities before seeding, preferably the previous one or two growing seasons, by planting cover crops, tillage, and/or herbicides.

A reliable system of establishing either cool- or warm-season grasses is to drill a cover crop of sorghum or corn (bin run) during the growing season before seeding grass, at the rate of 10 and 100 lb/acre, respectively. The cover crop will suppress the grass weeds and also offer erosion protection. Drilling should be directly into the cover crop or stubble (12 to 18 inches) without tillage. If annual grass weeds become a problem in big bluestem and/or switchgrass, atrazine and crop oil could be sprayed postemergence.

Use of Prescribed Burning as a Management Tool

Prescribed burning can play a role in the management of CRP acres, both pre- and post-seeding. Weed

seed, especially grass weeds such as downy brome, can be reduced by burning before seed droppage. However, although fire alone will not constitute adequate weed control, it could be used in conjunction with other measures. Prescribed burning also can be used to reduce troublesome weed residues before seeding. In general, the use of fire should be viewed as only one of several tools and should be considered in conjunction with herbicides, tillage, and seeded cover crops.

After grass establishment, prescribed burns may become a very important tool under specific conditions to control invading weed species, especially woody plants. This will be especially true where no grazing or haying is permitted for several years.

Timing of the prescribed burn is critical to its effectiveness in controlling specific weeds. Burning is generally more useful on acres established to warm-season grasses, especially in the eastern part of the state where higher precipitation results in more growth and greater amounts of dead litter. In addition to controlling some of the weed species, burning can stimulate new grass seedings and tillers which can thicken the stand. Burning may also be useful as a pre-treatment when getting ready to interseed legumes into the grass stand.

It is beyond the scope of this discussion to provide specific guidelines on the use of fire as a management tool for CRP acres. Anyone contemplating the use of fire should first contact their NRCS office and seek expert counsel and help. It should be understood that burns must be conducted in accordance with state and local laws and regulations and that landowners are responsible for confining the burn to their own land.

Mowing

Mowing can be used effectively to suppress weed competition on newly established stands of grass. Either sickle-bar or rotary mowers are satisfactory, providing the mowed material does not smother the young seedlings. Mowing height should be above the seedlings or not remove over 60 percent of the leaf area.

There are many different situations that can occur on CRP acres that may jeopardize the success of grass and legume seedings. Producers should consult extension weed and crop specialists and NRCS personnel for the seeding and weed control plan that best fits each situation.

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